Demonstration of Satisfaction of Ten-Year Construction Requirement

WirelessCo, L.P. d/b/a Sprint PCS Engineering Exhibit

This Engineering Exhibit has been prepared in accordance with Section 24.203 (a) of the Commission's Rules to demonstrate the satisfaction of the ten-year construction requirements by WirelessCo, L.P. d/b/a Sprint PCS ("Sprint"). Sprint is the licensee of station KNLF292, Frequency Block B in the Wichita Major Trading Area (MTA 046). Based on 2000 Census Bureau data, the population in this MTA is 1,206,233.

I. Engineering Standards

Section 24.203 (a) of the Rules requires licensees of 30 MHz blocks to "serve with a signal level sufficient to provide adequate service to at least one-third of the population in their licensed area within five years of being licensed and two-thirds of the population in their licensed area within ten years of being licensed". As described below, Sprint has utilized a predicted signal level of –103 dBm as the appropriate signal level threshold to meet this requirement.

The Sprint network in MTA 046 utilizes CDMA technology. The signal level threshold of –103 dBm is derived from a CDMA link budget. A link budget is the sum of the transmitted power gains and losses between the base station and the mobile handset. The link budget incorporates the required transmit power and receive sensitivities of the base station and mobile handset in order to achieve a balanced link and to ensure that the expected quality of service is maintained over the radio link.

For the purposes of modeling signal level coverage in an RF propagation tool, the values for base station transmitter power, antenna gain, and cable loss are set to the maximum allowable values. These values are subtracted from the link budget to determine the path loss and the resulting signal level threshold of –103 dBm. The signal level threshold is conservative and thus actual coverage may extend beyond the –103 dBm threshold, depending upon interference conditions.

II. Population Estimates – Methodology

Sprint utilized 2000 Census Bureau data in accordance with Section 24.203(a) of the FCC's rules. The U.S. Census Bureau utilizes census tracts (defined in the following section) to subdivide counties into statistical geographic references for population. The MTA border shares the borders of the counties contained within it and is therefore appropriately represented by the census tracts. The Wichita MTA contains 240 census tracts; as indicated above, the total population of this MTA is 1,206,233.

Census Tracts

The Census Bureau defines a Census tract as "[a] small, relatively permanent statistical subdivision of a county delineated by local participants as part of the U.S. Census Bureau's Participant Statistical Areas Program." The U.S. Census Bureau delineated census tracts in situations where no local participant existed or where local or tribal governments declined to participate. The primary purpose of census tracts is to provide a stable set of geographic units for the presentation of decennial census data. This is the first decennial census for which the entire United States is covered by census tracts. For the 1990 census, some counties had census tracts and others had block numbering areas (BNAs). In preparation for Census 2000, all BNAs were replaced by census tracts, which may or may not cover the same area.

Census tracts generally have between 1,500 and 8,000 people, with an optimum size of 4,000 people. (Counties with fewer people have a single census tract.) When first delineated, census tracts are designed to be homogeneous with respect to population characteristics, economic status, and living condition[1].

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[1] Bureau of the Census, 2000 Census of Population and Housing, Appendix A. Geographic Definitions.

III. Service Areas Predictions

To determine areas of "adequate service" within the MTA, Sprint utilized PlaNET EV, a propagation prediction tool. The PlaNET EV RF prediction tool is a product of Metapath Software International Ltd. Many wireless operators currently use the PlaNET EV RF prediction tool. Sprint utilizes this tool for system design and RF propagation modeling. The RF propagation model selected within the PlaNET EV RF prediction tool allows for the tuning of each sector of each site's propagation with actual drive test data (continuous wave). The process of tuning each model provides the user with an accurate representation of each site's actual RF coverage. Also considered by the tool are market-specific terrain conditions. Sprint has further modified the coverage represented by the tuned model predictions with actual CDMA system field test measurements, under loaded conditions, to create coverage maps for marketing and other purposes, and in creating the coverage map attached as Exhibit 1. A comparison between system measurements and tuned RF propagation models has verified the accuracy of the predicted/tuned signal level coverage.

IV. Population Coverage – Results

Once the service area signal level coverage has been determined, the coverage is overlaid upon the census tract data. In cases where the centroid of a particular census tract is contained within the coverage area, the population associated with that census tract was included in the calculation. In cases where the coverage area overlaps the census tract, but the centroid of the census tract is not within the coverage area, the population of that census tract is excluded from the calculation.

Exhibit 1 depicts the area (shown in green) with a received signal of –103 dBm or higher. Exhibit 1 also depicts the population density within the Wichita MTA (1 Dot= 240 people). Exhibit 1 also demonstrates that Sprint has a total covered population of 824,416 in the Wichita MTA.

V. Conclusion

As of the date of this filing, Sprint is currently utilizing frequencies associated with the above referenced license to provide a signal level of –103 dBm or higher within the licensed service area. As shown in Exhibit 1, Sprint's network in MTA 046 covers an estimated population of 824,416 out of a total MTA population of 1,206,233, meaning that fully 68% of the population is being covered. Accordingly, Sprint satisfies the ten year construction requirement.

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Exhibit 1
Wichita MTA 046
License Block B - Call Sign KNLF292